Fort Irwin Expansion and Desert Tortoise Translocation

Background

In December 2000 Congress approved and the President signed legislation authorizing the expansion of the National Training Center at Fort Irwin, California. The United States Fish and Wildlife Service (USFWS) has been coordinating with the Department of Defense (DOD) and research groups on the disposition of desert tortoises that had been living in the Fort Irwin National Training Center expansion area. In order to minimize the impacts of military training activities to desert tortoises occupying the expansion area, USFWS determined through the Endangered Species Act's (ESA) section 7 consultation process that these tortoises should be translocated.

The translocation is being conducted as a scientifically-based research and monitoring program, guided by a peer-reviewed translocation plan developed by the U.S. Geological Survey (USGS). Suitable habitat was identified through extensive modeling and field visits. Beginning on March 26, 2008, 556 desert tortoises were translocated from Fort Irwin's southern expansion area to various sites in the Superior-Cronese critical habitat unit to the south. Only tortoises determined to be healthy based on detailed evaluation were translocated.

Translocation Monitoring and Research

It is critically important in an effort of this magnitude that we learn as much as possible about the effects and effectiveness of the translocation. Therefore, approximately 400 translocated and 350 resident and "control" tortoises are part of an intensive monitoring program and several research projects.

One USGS study is investigating physiological stress as a measure of the potential effects of translocation. Some theories suggest that translocations of wild animals into new habitats and populations may cause chronic stress that could have cascading impacts on immune function and other physiological factors. Alternatively, some mammal relocation research suggests that acute stress could boost the likelihood of early survival. However, this topic has been studied very little, especially in reptiles.

Another USGS study is monitoring the health of translocated tortoises over time, as well as investigating potential differences in survival and changes in health status between groups of translocated tortoises that a) have shell disease (a non-contagious condition), b) show visible trauma to the shell (e.g., chew marks from a dog or coyote), or c) appear completely healthy overall.

ITS, Inc., and its collaborators are studying various aspects of the translocation process itself, such as effects of the distance tortoises were released from their original locations (e.g., do tortoises that are moved shorter distances do better/worse than tortoises moved longer distances) or whether providing an artificial burrow upon release provides a benefit to translocated tortoises. Another question seeks to determine whether tortoises released into 5-hectare pens fare better or establish home ranges in the area (upon removal of the pen) compared to tortoises released without such penning.

The ultimate measure of success is recruitment of translocated animals into the host population, so ITS and Smithsonian Institution researchers are measuring this using DNA profiling to characterize the genotype of all translocated animals and as many resident animals and hatchlings as possible to determine the familial relationships of the hatchlings. An immediate measure of success or failure can be determined by monitoring reproductive activity. Translocated tortoises are being monitored to determine when they begin reproducing and the number of eggs produced. The habitats of source and destination areas (i.e., those areas in which the translocated tortoises establish "normal" home ranges) will also be evaluated to determine if animals end up settling in areas more similar to their original homes and if there are characteristics of areas that are more "attractive" to tortoises in general.

Nature's Monkey Wrench in the Project - Coyote Predation

Prior to the translocation, coyotes were preying on tortoises throughout the species' range, including both the expansion area and the release area (49 out of a total of approximately 1000 tortoises being monitored). The coyotes' normal prey base of rabbits and other small rodents has been reduced likely in association with the recent and widespread drought, causing them to turn to less desirable prey items such as the desert tortoise. After the translocation this spring, coyotes began affecting a localized group of resident/control and translocated research animals at unusually high levels. Research animals west of the Manix Trail, both translocated and resident, were being killed at a greater rate than the surrounding area, putting the research at risk and thereby jeopardizing our ability to learn from this project. When this happened, the Department of the Army at Fort Irwin, Department of Agriculture Wildlife Services, Bureau of Land Management, California Department of Fish and Game, and USFWS together evaluated the situation and agreed to conduct focused predator control in this portion of the translocation area. Since predation of desert tortoises was near zero elsewhere in the translocation area, the agency partners agreed that coyote control efforts would be limited to the affected area rather than undertaking widespread predator control across the entire translocation area.

June 9, 2008, Update

Monitoring efforts and research activities for all projects are ongoing. As of July 7, 39 out of over 400 adult translocated tortoises (with transmitters) had been attacked or killed from all causes (most by coyote predation), an overall rate of approximately 9.5%. In comparison, 34 out of almost 400 adult resident, telemetered tortoises had been attacked/killed (not including those prior to the actual translocation), an overall rate of approximately 9.6%. Most predation is still occurring west of the Manix Trail, and coordination with Wildlife Services continues to try to address the problem. From these preliminary numbers, it is apparent that while mortality is somewhat elevated overall, at least relative to non-drought conditions, there has been no statistically detectable effect of the translocation itself on predation rates. It is clear that tortoises that have not been moved are just as likely to be preyed upon as tortoises that were moved.

Approximately 100 tortoises currently remain in the southern expansion area, with plans to release these in the fall in areas that will not confound the research currently being conducted (as well as outside the areas currently affected by concentrated coyote predation). Surveys of the western expansion area have also begun. Final designation of release sites for the western expansion translocation (anticipated to occur in 2009-2010) remains to be determined. However, any translocations from the western expansion area will not occur in areas used for the southern

translocation to avoid confounding the existing research and to minimize potential complications with over-saturating the habitat with tortoises.